

Research Article

Descriptive Analysis of Student Learning Outcomes in Online and Offline Biology Learning

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ARTICLE INFO**Article history**Received 19th of August, 2021Revised 25th of August, 2021Accepted 21st of Sept., 2021Published 30th of Nov., 2021**Keywords**

Learning Outcomes

Offline Learning

Online Learning

Learning Effectiveness

ABSTRACT

This study aims to describe and analyze student learning outcomes in online and offline biology learning at SMAN 1 Padang, West Sumatra. This type of research is descriptive research with the sampling technique used being total sampling. The research sample was 555 students of class X MIPA in 2019 and 2020. The data collection technique in this study used documentation and interview techniques. The data of this research used documents of student learning outcomes and interviews with one of the biology subject teachers. The results of this study indicate that: (1) the percentage of students' complete learning outcomes in offline biology learning is 87% with effective qualifications. (2) the percentage of complete learning outcomes of students in online biology learning is 65% with quite effective qualifications. (3) the percentage of learning completeness in offline biology learning has reached a predetermined percentage, while online biology learning has not yet reached the predetermined percentage of learning completeness. Based on the results of data analysis, it can be concluded that in SMA Negeri 1 Padang offline biology learning is more effective than online biology learning

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**INTRODUCTION**

Early 2020 in March, Indonesia experienced the Covid-19 outbreak which became a global pandemic. Covid-19 (Corona Virus Disease) was first discovered in the Wuhan area, China at the end of 2019 and spread to various countries quickly through droplets, making positive cases of Covid-19 continue to increase. In an effort to prevent the spread of Covid-19, the Indonesian government issued a Circular Letter from the Minister of Education and Culture No. 3 of 2020 concerning the Prevention of Covid-19 in Education Units on March 9, 2020; Circular Letter of the Minister of Health No. HK.02/MENKES/199/2020 on March 12, 2020, and Circular Letter of the Secretary-

General of the Ministry of Education and Culture No. 36603/A.A5/OT/2020 on March 15, 2020 (Rahmatia et al., 2020). Based on the letter, it was stated that the face-to-face learning system would be replaced with online learning.

Online learning is learning that uses a system that is not face-to-face, but by utilizing the internet network and platforms that can help the learning process between educators and students so that they can achieve the expected learning goals (Handarini & Wulandari, 2020). The platforms used in online learning as a form of learning facilities are the Zoom Cloud Meeting application, the Google Classroom application, Youtube, WhatsApp (Rahmatia et al., 2020), and several high schools in West Sumatra also using the Si Cadiak Pandai platform. Some of these platforms are used to support the online learning process, so as to create a communication system between educators and students as in offline biology learning.

Communication systems that may occur when using the platform include one-way, semi-two-way, and two-way. In a one-way communication system, students are only given media in the form of: power points, videos, audio, and written text documents by educators, and there is no feedback between educators and students. The semi-two-way communication system allows educators and students to have alternate and continuous communication. Meanwhile, the two-way communication system allows direct but virtual communication using video conferencing. According to research results (Maulah et al., 2020), students prefer semi-two-way communication systems

The selection of the platform used in online learning adapts to the situation and conditions of educators and students (Ekantini et al., 2020). This is because the platform reflects the learning model and also the communication system used in learning so that it will affect the effectiveness of the learning process, ability in learning, and also the learning outcomes of students.

The effectiveness of online learning can be seen from 3 factors, namely technology, the character of the educator, and the character of the students (Fauziyah, 2020). Other studies also state that the effectiveness of online learning is supported by the availability of facilities and infrastructure to support the learning process, in this case, the facilities are gadgets, PCs or laptops, and internet networks. The ability of educators to plan and organize the learning process is considered to greatly affect the effectiveness of online learning (Irawati & Santaria, 2020). The quality of learning can be improved by improving the learning process and the assessment process used to measure student learning outcomes so that learning can be categorized as effective (Mahendra & Parmithi, 2021). The effectiveness of the learning process can affect the learning outcomes of students, where the learning outcomes are an output or results obtained by students after getting material from the activity. These learning outcomes are obtained from the results of the evaluation of learning outcomes organized by educators and schools (Rahmawati, 2020).

According to Wijayanti (2021), the meaning of learning effectiveness can be said as an accuracy of selection that can result in the fulfillment of learning targets or objectives with maximum achievement selected based on situations and conditions that occur in schools. The effectiveness of learning can also be related to the achievement of learning objectives based on the minimum completeness criteria for learning outcomes obtained by students. If students achieve the minimum completeness criteria for learning outcomes that

have been determined, the learning objectives are said to be achieved and the learning process can be said to be effective. The purpose of this study was to describe and analyze online and offline student biology learning outcomes in class X SMAN 1 Padang, West Sumatra.

METHOD

The type of research conducted is descriptive research. Descriptive research aims to describe and explain in detail related to a data, information or phenomenon that occurs. This study describes and analyzes data on student learning outcomes in online and offline Biology learning. The sample of this research is students of class X MIPA at SMA Negeri 1 Padang, totaling 555 students which are divided into 2 different groups. The first group is the 2019/2020 school year, where learning is offline and the second group is the 2020/2021 school year, which is online learning. The data collection technique in this study used documentation and interview techniques. The documentation technique was carried out with the aim of obtaining data on the results of the student learning process, while the interview technique was carried out by interviewing one of the biology subject teachers using an interview guidelines.

The data in this study were obtained from documents containing the results of the learning process of students and also the results of the researcher's interview with one of the biology subject teachers at SMA Negeri 1 Padang which contained several obstacles experienced in the online Biology learning process. The data that has been obtained is what will be described and analyzed descriptively. The learning outcomes data are then processed into the percentage of students' complete learning outcomes. The completeness of these student learning outcomes is obtained from the mid-semester test scores for class X MIPA students in the 2019/2020 school year and 2020/2021 in the odd semester. Biology learning is said to be successful if the value of student learning outcomes meets the minimum completeness criteria (KKM), in biology subjects at SMA Negeri 1 Padang is 80. The formula used to calculate student learning completeness is as follows.

$$\text{Percentage} = \frac{\text{Number of Students Reaching KKM (minimum score)}}{\text{Total Number of Students}} \times 100\%$$

The results of these percentages will be categorized based on the qualification criteria in the following **Table 1**.

Table 1. Criteria for completeness Level of Student Learning Outcomes

Percentage range	Qualification
80-100	Effective
60-79	Quite Effective
40-59	Less Effective
<40	Not Effective

(Novianto et al., 2018)

RESULTS AND DISCUSSION

Based on the results of statistical data processing, the results of descriptive analysis of the learning outcomes of class X students at SMAN 1 Padang in learning biology are obtained, which are described in Table 2 below.

Table 2. Percentage of Students' Learning Completeness Results

Percentage of Students' Learning completeness Results					
Class X MIPA 2019	Percentage (%)	Qualification	Class X MIPA 2020	Percentage (%)	Qualification
1	83	Effective	1	66	Quite Effective
2	92	Effective	2	69	Quite Effective
3	81	Effective	3	68	Quite Effective
4	86	Effective	4	70	Quite Effective
5	86	Effective	5	55	Less Effective
6	83	Effective	6	58	Less Effective
7	92	Effective	7	72	Quite Effective
8	91	Effective	-	-	-
Average	87	Effective	Total	65	Quite Effective

The results of data processing are carried out per class in X MIPA in 2019 and 2020. The percentage of learning completeness obtained by each class is in the all-effective category for class X MIPA in the 2019/2020 academic year and there are two categories for learning biology in class X MIPA in the academic year 2020/2021, which are less effective and quite effective. The average percentage of students' learning completeness in offline biology learning is 87% with effective qualifications. Online biology learning gets a percentage of 65% with an overall quite effective qualification.

Learning is categorized as effective if the learning process makes it easy for students to learn and understand something useful such as facts, concepts, skills, side by side with others, values, or other learning outcomes. The interaction carried out by educators and students or the interaction between students and their environment in a learning process activity is the purpose of learning effectiveness (Rahmatia et al., 2020). Biology learning that is carried out offline allows all of these things to happen properly, while online biology learning requires maximum effort and support from all parties (Muliadi et al., 2021). The support comes from the students themselves, educators, and families to create an effective learning process.

Online biology learning in this study is said to be quite effective overall. This can be caused by a change in the learning process that is too fast, so that the preparation for the online biology learning process has not been maximized (Muliadi et al., 2021). However, this sudden change in the learning process has a positive impact on students, namely it can form students' learning independence. This is following the results of research by (Sadikin & Hamidah, 2020) research, namely online learning can foster self-regulated learning. According to Trianto (2009), a class can be said to be complete in the learning process (classical completeness) if the percentage of completeness of students in the class reaches 85%. Thus the percentage of learning completeness in class X at SMA 1 Padang in class X MIPA for the 2019/2020 academic year has reached classical learning completeness, while for class X MIPA 2020/2021 it has not achieved maximum success in learning in accordance with the minimum standard of classical completeness that has been set. determined.

Based on the results of an interview with one of the teachers in the field of biology, it can be seen that the online biology learning process has several shortcomings. One of the drawbacks of online learning is that the preparation is not optimal due to the sudden change in the mechanism of the learning process. The process of habituation and the selection of supporting facilities in online biology learning, the unstable internet condition of some students, and the lack of ability to master today's technology are the triggers for the lack of effectiveness of online biology learning. This is in accordance with the results of research from Darussyamsyu and Suhaili (2020), one of the negative impacts of the online learning process in terms of facilities and infrastructure is that the facilities and infrastructure available at students' homes are incomplete and inadequate to access the internet freely.

The biology learning process requires many guided practice sessions outside of theory sessions, but in this online learning, the practical sessions are not carried out properly. The two-way learning model that occurs when face-to-face learning must also be adapted to online learning conditions, this causes problems for educators and students, so that the two-way learning process cannot be applied to every lesson. Lack of good coordination and monitoring from educators to students is one of the obstacles experienced in the online learning process so that the learning process does not achieve the expected results.

According to the research results of (Maulana, 2021) related to the effectiveness of online learning on the results of the biology learning process on the concept of biodiversity, student learning outcomes do not meet classical completeness. The application of online learning using media in the form of Whatsapp groups for students does not meet the required indicators as determined so that biology learning is considered ineffective. Similar research also stated that online learning in the Biology Study Program at the beginning of the Covid-19 pandemic was less effective because students had difficulty understanding lecture material and had limitations in the process of interaction and discussion (Muliadi et al., 2021).

CONCLUSION

The results of the analysis of student learning completeness based on the minimum completeness criteria (KKM), offline biology learning has reached the KKM in the entire class. The average percentage of learning completeness of all offline classes is 87% (effective category), fulfilling classical completeness. Online biology learning gets an average percentage of overall learning completeness of 65% (the category is quite effective), but it has not yet reached classical completeness. From the results of the study, it can be concluded that in SMA Negeri 1 Padang offline biology learning is more effective than online biology learning.

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